AFM **3.7 Systems of Equations** Chapter 3

**Systems of Equations:** A set of two or more equations using the same variables.

**Solving Systems by Graphing** (two variables only)

You can solve a system of equations with two variables (x and y) by graphing the equations set equal to \_\_\_\_\_\_.

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| **Name:** | **Name:** | **Name:** |
|  |  |  |
| **Solution:** | **Solution:** | **Solution:** |

**Example 1:** Solve the following by graphing. Be sure to set each equation equal to y before finding the intersection.

1. 
2. 
3. 

|  |  |
| --- | --- |
| **Solving**  **by Substitution:** | * + - 1. Pick one equation and solve for y (or x, but pick one varibale only)       2. Substitute what the “y” is equal to into the second equation.   *\*\*\*When you do this, the second equation should only have one variable now!*   * + - 1. Simplify the equation, and solve for x.       2. Substitute the value of x into either the first or second equation   *\*\*\*When you do this, you should only have one y in the equation!*   * + - 1. Solve for y, and write your solution as an ordered pair |

**Example 2:** Solve each of the following using substitution.

a) What is the solution of the system? 

b) What is the solution of the system? 

**Example 3:** One satellite radio service charges $10 per month plus an activation fee of $20. A second service charges $11 per month plus an activation fee of $15. For what number of months is the cost of either service the same?

|  |  |
| --- | --- |
| **Solving**  **by**  **Elimination:** | 1. Move both variables to one side, and line them up alphabetically. 2. If needed, find a multiplier so the sum of the same variables “cancels” out. 3. Add the two equations together, then solve for the non-eliminated variable. 4. Substitute into one of the original equaitons, and solve for the other variable. 5. Write your solution as an ordered pair. |

**Example 4**: Solve the following using elimination.

a) 

b) 



c) Solve using elimination:

**Example 5:** A basketball team stopped at a fast-food restaurant after a game. They divided into two groups. One group bought 5 chicken sandwiches and 7 hamburgers for a cost of $24.90. The second group sent $28.80 and bought 5 chicken sandwiches and 9 hamburgers. How much does a hamburger cost?